

## Preface

RPG IV, the version of the RPG language that participates in IBM's Integrated Language Environment (ILE), represents a dramatic step forward in RPG's evolution. RPG IV diverges from its predecessor, RPG III, in significant ways. However, to encourage adoption of the new ILE RPG/400 compiler and to prevent a nightmare for those programmers faced with maintaining older RPG programs, IBM made this latest release largely "backward-compatible" with older versions of RPG. Programs written before 1995 can easily be converted to RPG IV and subsequently modified, without the need for complete program rewrites. Although such backward-compatibility is a practical solution for language developers, it means that the language must retain some components that, in fact, the new features make obsolete.

Writing a textbook about a new version of a language, then, presents authors with a difficult decision: How much emphasis should be given to those features that, although still available in the language, really represent an outmoded approach to programming? Giving obsolete syntax equal importance with the language's more modern features might inappropriately encourage students to write outdated code; at the very least, equal coverage can unnecessarily complicate the learning process. On the other hand, ignoring those obsolete features completely would give students an incomplete understanding of the language and would ill prepare them for program-maintenance tasks. With the introduction of the free-format specification, the challenge becomes even more problematic than before. The free-format syntax represents a much more dramatic departure from traditional columnar RPG than did previous releases.

This textbook tries to solve the dilemma by initially presenting students with the most suitable, modern techniques that RPG IV offers for solving typical programming problems. As RPG IV matures and its use becomes widespread, it's important that students be presented with the language in its most current form, using the style and techniques that will serve them for the long term. Thus, the bulk of the book features the appropriate methods and strategies that contemporary programmers use, relegating much of the older styles, operations, and fixed-format techniques to Appendix E. When students tackle maintenance tasks on older RPG programs (maybe even RPG III or RPG II programs), they will be able to refer to the information in Appendix E for help.

*Programming in RPG IV* tries to bridge the gap between academia and the business world by presenting all the facets of RPG IV needed by a professional programmer. The material is introduced incrementally, and the book is organized so that students quickly begin writing complete—although simple—programs. Each successive chapter introduces additional information about RPG IV syntax and fundamental programming methods, so that students become increasingly proficient at developing RPG IV programs—programs that grow in complexity as students progress through the book.

Each chapter includes a brief overview, which orients students to the material contained in the chapter, and a chapter summary, which reviews the chapter's major points. The end-of-chapter sections include discussion/review questions, exercises, and programming assignments designed to help students develop their analytical and problem-solving skills, as well as their proficiency with RPG IV syntax.

The programming assignments at the end of each chapter are arranged roughly in order of difficulty, so that instructors can assign programs appropriate to their time schedules and their students' abilities. Although none of the program solutions are long by commercial standards, some of the necessary algorithms are quite difficult; the assignments require time and effort on the part of the students to develop correct solutions. Unfortunately, there is no "easy road" to becoming a good programmer, nor can students learn to deal with program complexity by merely reading or talking about it. Programming, as much as any other activity we know, is truly a matter of "learning

by doing.” Those students interested in becoming IT professionals must recognize that they have chosen a rewarding—but demanding and challenging—profession, and they need to realize that they must be willing to work hard to succeed in this profession.

To give students experience developing application systems, rather than programming in a vacuum, most of the programming assignments relate to three fictitious companies and their application needs (described in Appendix F). By working on these assignments, students should gain a sense of how a company’s data files are repeatedly used by numerous applications for different, related purposes.

The structure and order of this edition of *Programming in RPG IV* have dramatically changed from previous editions. The new sequence of topics is the result of actual experience using the existing materials in both corporate training and academic institutional environments. We think you’ll find the new order and the new topics work better than previous editions to methodically introduce students to RPG IV. This edition also places much more emphasis on the Integrated Language Environment than did previous editions and better covers the important topics of procedures and binding. The material uses Version 5 Release 4 as a baseline and is current at that release and later.

Appendices A and B are intended to be reference material not only for students, but also for working RPG IV programmers. Appendix A serves as a reference digest of RPG specifications, keywords, and miscellaneous entries. Appendix B suggests style guidelines for writing programs that will be easy to read, understand, and maintain.

Although a complete introduction to using the System i is beyond the scope of this text, Appendix C introduces students to working on the system using Programming Development Manager (PDM) as well as WebSphere Development Studio Client (WDSCL). This appendix also acquaints students with PDM’s Source Entry Utility (SEU) and WDSCL’s LPEX editor. Appendix D provides some insights into program testing and debugging, often bewildering processes for beginning programmers.

This text strives toward a coding style that represents the current state of RPG IV syntax, but it’s likely that RPG IV programmers will be called upon to maintain existing RPG programs that are based on older features. To help students understand these programs, Appendix E covers older, now obsolete, RPG IV syntax as well as RPG III and RPG II.

Depending on the length of the school term and the pace of the course, some instructors may choose to present this material over two terms. An instructor’s manual is available to those instructors adopting this text for classroom use. The manual provides answers to the review questions and solutions to the exercises. The manual also includes a CD with the data files needed for the programming assignments, the source code for the solutions to the programming assignments, and copies of the output produced by the solutions.